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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/407,177	09/28/1999	BRYAN KOK ANN NGOI	032501-006	2405

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BURNS DOANE SWECKER & MATHIS L L P
POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

EXAMINER

LEE, HWA S

ART UNIT PAPER NUMBER

2877

DATE MAILED: 06/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/407,177

Applicant(s)

NGOI ET AL.

Examiner

Andrew H. Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sommargren (4,606,638) in view of Grego (4,762,414).

Sommargren shows a distance measuring interferometer comprising:

a laser source, which produces an output having two superimposed orthogonally polarized beams having S and P polarizations;

means for causing the measurement beam to strike the object of interest at an oblique angle after passing through a glass plate having a polarization coating on the bottom surface close to the object of interest, the oblique angle such that the S polarization of the incident beam is reflected from the bottom surface of the polarization coated glass plate and the P polarization refracts through the glass plate, the P polarization reflects from the substantially non-transparent object of interest and refracts to the glass plate;

means for causing the reflected S and P polarization beams from the bottom surface of the glass plate and the surface of the object respectively to interfere

a measurement photo detector; and

means for determining the distance between the bottom surface of the glass plate and the object surface.

Sommargren does not show the elements/steps for heterodyning the system including the laser producing the two beams of different frequencies and means for splitting/causing/detecting the reference beams to interfere. Grego shows an interferometer utilizing heterodyning to accurately measure distances between surfaces. At the time of the invention, one of ordinary skill in the art would have been motivated to modify Sommargren with the heterodyning taught by Grego. The skilled artisan would have been motivated because heterodyning is well known in the art for being more accurate in obtaining clear interference signals. Therefore, the skilled artisan would have used Grego's beamsplitter (5), reference detector 6, and the laser (3) in order to heterodyne Sommargren's apparatus.

3. As for claims 2 and 17, Grego shows a Zeeman laser source (3).

4. As for claims 3 and 18, Grego show in column 3, lines 53+, the use of an acousto optic modulator.

5. As for claims 6 and 7, Grego shows a lens (10).

6. Claims 4, 5, 8-15, 19-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sommargren and Grego as applied to claim 1 above, and further in view of Cocito.

Grego does not expressly show the method of producing the scanning beams by means of an acousto optic deflector, however Cocito et al shows an acousto optic modulator to produce a combined two beams of different frequencies and at the time of the invention, one of ordinary skill in the art would have modified Grego to use the beam producing means taught by Cocito et al since Grego teaches that any functionally equivalent means of producing the scanning beams

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may be substituted. Furthermore, it would have been obvious to one of ordinary skill in the art and within his skills to modify the shape and size of the beams in order to obtain accurate information from the desired location using various bulk optics.

Response to Arguments

7. Applicant's arguments filed 4/1/03 have been fully considered but they are not persuasive.

In response to applicant's argument that the combination of Grego and Sommargren would not be capable of measuring a flying height distance if one of ordinary skill in the art was to "substitute the heterodyne interferometer system of Grego for the single wavelength system of Sommargren", the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this particular instance, Grego suggests the use of heterodyning, thus suggesting to one of ordinary skill in the art to use heterodyning for advantages over homodyning such as better signal quality through elimination of polarization leakage or the need for careful alignment of optical elements. Please see Grego column 2, lines 39+.

8. In response to applicant's argument that there is no suggestion to combine the references and in particular that the examiner does not cite a prior art reference that heterodyning is well known in the art offers the advantage of providing clearer signals, the examiner recognizes that

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obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the advantages of heterodyning is in the knowledge generally available to one of ordinary skill in the art. Furthermore, Grego teaches some advantages as discussed in previously cited passage.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Papers related to this application may be submitted to Technology Center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the PTO Fax Center located in

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CP4-4C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Center number is (703)308-7722 or 308-7724.

If the Applicant wishes to send a Fax dealing with either a Proposed Amendment or for discussion for a phone interview then the fax should:

a) Contain either the statement "DRAFT" or "PROPOSED AMENDMENT" on the Fax Cover Sheet; and

b) Should be unsigned by the attorney or agent.

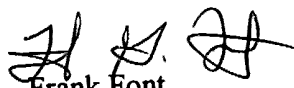
This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew H. Lee whose telephone number is (703) 305-0538.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC receptionist whose telephone number is (703) 308-0956.



Andrew Lee
Patent Examiner
Art Unit 2877
June 4, 2003/ahl



Frank Font
Supervisory Patent Examiner
Art Unit 2977